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## DEPARTMENT OF AGRICULTURE

### OFFICE OF THE DAIRY COMMISSIONER

OTTAWA, September 5, 1919.

# Yield and Relative Value of Some Dairy Products

TABLE I

Showing approximate yield of different products from 100 pounds of milk containing 3.5 per cent of fat and 12.5 per cent of total milk solids.

Product.	Pounds.	Pounds.
Cheese.....	9.30	and Whey 90
Butter.....	4.20	and Skim milk 90
Evaporated Milk (Unsweetened).....	39.68	
Condensed Milk (Sweetened).....	39.68*	
Milk Powder.....	12.75	
Cream Powder.....	4.77	and Skim milk Powder 7.62
Skim milk Powder.....	8.23	and Butter 4.20

\*The yield indicated is obtained from condensing 100 pounds of milk to which a certain quantity of cane sugar (usually 17 to 19 pounds) has been added before the condensing process is started.

TABLE II

Showing approximate yield of Canadian cheddar cheese and butter from 100 pounds of milk containing different percentages of fat.

Per Cent of Fat in Milk.	Pounds of Cheese from 100 Pounds of Milk.	Pounds of Butter from 100 Pounds of Milk.
3.0	8.52	3.60
3.1	8.73	3.72
3.2	9.02	3.84
3.3	9.14	3.96
3.4	9.21	4.08
3.5	9.30	4.20
3.6	9.39	4.32
3.7	9.50	4.44
3.8	9.72	4.56
3.9	9.90	4.68
4.0	10.08	4.80

TABLE III

Showing the prices which must be obtained for cheese and butter to give the same net return for one hundred pounds of milk testing 3.5 per cent of fat, or for one pound of fat or for one pound of "fat and casein" (fat + 2).

(1) Price of Cheese.	(2) Net Return for 100 Pounds Milk.	(3) Equivalent Price of Butter.	(4) Net Return for 1 Pound Fat.	(5) Net Return for 1 Pound "Fat and Casein". (Fat + 2).
cts.	\$	cts.	cts.	cts.
12.00	0.91	25.75	26.00	16.54
12.25	0.93	26.25	26.57	16.90
12.50	0.95	26.75	27.14	17.27
12.75	0.98	27.25	28.00	17.81
13.00	1.00	27.75	28.57	18.18

(1) Price of Cheese.	(2) Net Return for 100 Pounds Milk.	(3) Equivalent Price of Butter.	(4) Net Return for 1 Pound Fat.	(5) Net Return for 1 Pound "Fat and Casein". (Fat + 2).
cts.	\$	cts.	cts.	cts.
13.25	1.02	28.25	29.14	18.54
13.50	1.05	29.00	30.00	19.09
13.75	1.07	29.50	30.57	19.45
14.00	1.09	30.00	31.14	19.81
14.25	1.12	30.75	32.00	20.36
14.50	1.14	31.25	32.57	20.72
14.75	1.16	31.75	33.14	21.09
15.00	1.19	32.25	34.00	21.63
15.25	1.21	32.75	34.57	22.00
15.50	1.23	33.25	35.14	22.36
15.75	1.26	34.00	36.00	22.90
16.00	1.28	34.50	36.57	23.27
16.25	1.30	35.00	37.14	23.63
16.50	1.33	35.75	38.00	24.18
16.75	1.35	36.25	38.57	24.54
17.00	1.37	36.75	39.14	24.90
17.25	1.40	37.25	40.00	25.45
17.50	1.42	37.75	40.57	25.81
17.75	1.44	38.25	41.14	26.18
18.00	1.47	39.00	42.00	26.72
18.25	1.49	39.50	42.57	27.09
18.50	1.51	40.00	43.14	27.45
18.75	1.53	40.50	43.71	27.81
19.00	1.56	41.25	44.57	28.36
19.25	1.58	41.75	45.14	28.72
19.50	1.60	42.25	45.71	29.09
19.75	1.63	42.75	46.57	29.63
20.00	1.65	43.25	47.14	30.00
20.25	1.67	43.75	47.71	30.36
20.50	1.70	44.50	48.57	30.90
20.75	1.72	45.00	49.14	31.27
21.00	1.74	45.50	49.71	31.63
21.25	1.77	46.25	50.57	32.18
21.50	1.79	46.50	51.14	32.54
21.75	1.81	47.00	51.71	32.90
22.00	1.84	47.75	52.57	33.45
22.25	1.86	48.25	53.14	33.81
22.50	1.88	48.75	53.71	34.18



(1) Price of Cheese.	(2) Net Return for 100 Pounds Milk.	(3) Equivalent Price of Butter.	(4) Net Return for 1 Pound Fat.	(5) Net Return for 1 Pound "Fat and Casein". (Fat + 2).
cts.	\$	cts.	cts.	cts.
22.75	1.91	49.50	54.57	34.72
23.00	1.93	50.00	55.14	35.09
23.25	1.95	50.50	55.71	35.45
23.50	1.98	51.25	56.57	36.00
23.75	2.00	51.50	57.14	36.36
24.00	2.02	52.00	57.71	36.72
24.25	2.05	52.75	58.57	37.27
24.50	2.07	53.25	59.14	37.63
24.75	2.09	53.75	59.71	38.00
25.00	2.12	54.50	60.57	38.54
25.25	2.14	55.00	61.14	38.90
25.50	2.16	55.50	61.71	39.27
25.75	2.19	56.25	62.57	39.81
26.00	2.21	56.75	63.14	40.18
26.25	2.23	57.00	63.71	40.54
26.50	2.26	57.75	64.57	41.09
26.75	2.28	58.25	65.14	41.45
27.00	2.30	58.75	65.71	41.81
27.25	2.33	59.50	66.57	42.36
27.50	2.35	60.00	67.14	42.72
27.75	2.37	60.50	67.71	43.09
28.00	2.40	61.25	68.57	43.63
28.25	2.42	61.75	69.14	44.00
28.50	2.44	62.00	69.71	44.36
28.75	2.47	62.75	70.57	44.90
29.00	2.49	63.25	71.14	45.27
29.25	2.51	63.75	71.71	45.63
29.50	2.54	64.50	72.57	46.18
29.75	2.56	65.00	73.14	46.54
30.00	2.58	65.50	73.71	46.90
30.25	2.61	66.25	74.57	47.45
30.50	2.63	66.75	75.14	47.81
30.75	2.65	67.00	75.71	48.18
31.00	2.68	67.75	76.57	48.72
31.25	2.70	68.25	77.14	49.09
31.50	2.72	68.75	77.71	49.45
31.75	2.75	69.50	78.57	50.00
32.00	2.77	70.00	79.14	50.36



The figures in Table III are worked out on the following basis:—

	Cheese.	Butter.
1 pound fat produces.....	2.65 pounds	1.20 pounds
100 pounds 3.5 per cent milk produces.....	9.30 "	4.20 "
Cost of making per pound.....	2½ cents	4 cents

If 100 pounds of milk testing 3.5 per cent of fat produces 9.3 pounds of cheese, which is sold at the prices indicated in column 1, with a manufacturing charge of 2½ cents per pound of cheese deducted, and the value of the whey not taken into consideration:—

Column 2 shows the net return for 100 pounds of milk;

Column 4 shows the net return for 1 pound of fat;

Column 5 shows the net return for one pound of "fat and casein," if the proceeds are divided according to the "Fat + 2" method.

If 100 pounds of milk testing 3.5 per cent of fat produces 4.2 pounds of butter, for which a manufacturing charge of 4 cents per pound is deducted and the value of the skim milk is not taken into consideration:—

Column 3 shows the price at which the butter must be sold to realize the same net return 100 pounds of milk or per pound of fat or per pound of "fat and casein" as is shown in columns 3, 4 and 5, respectively.

If a producer knows what net price he can realize for 100 pounds of milk or for one pound of "fat and casein," as the case may be, this net return may be located in column 3 or column 5, and the same line in column 4 will indicate the net price which must be obtained for 1 pound of fat to equalize the price being obtained by either of the other two methods.

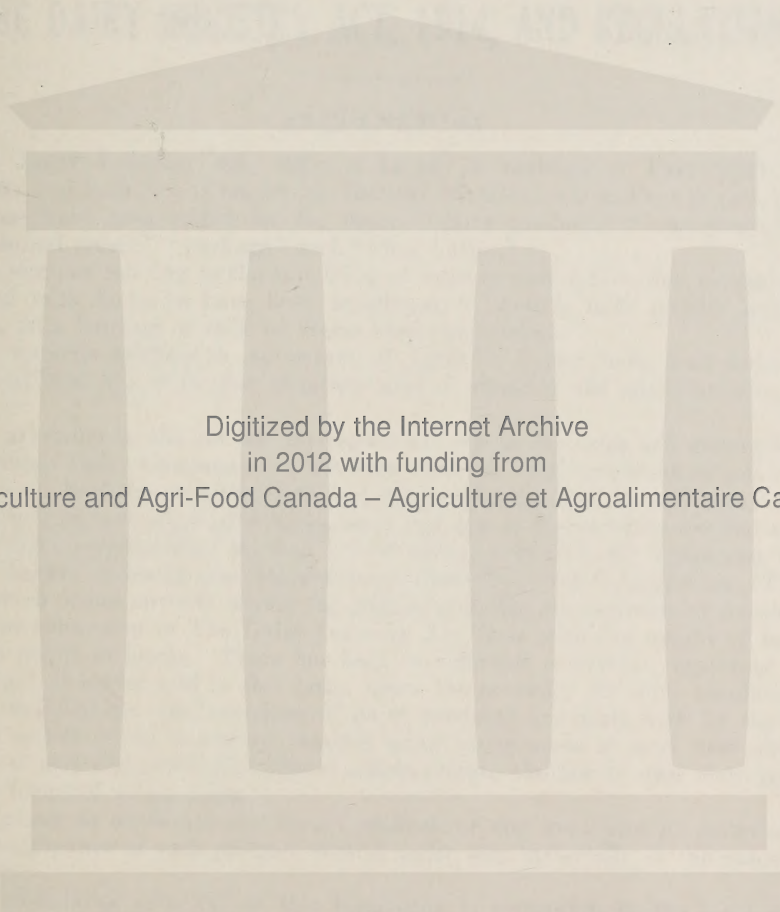
The value of the by-products (whey and skim milk) varies, since at times it is impossible for the producer to feed all of the by-products, and since their value depends also on the probable market value of the stock to which they are fed. Consequently, the value of the by-products is not taken into consideration in Table III. Each producer may estimate the value of the by-products in his own particular case and add the estimated value of the by-products to the value of the milk as shown in this Table. Table I shows the pounds of by-products from 100 pounds of milk.

In order to ascertain the net return of milk testing other than 3.5 per cent of fat, the net value per pound of the cheese or butter must be determined by subtracting the cost per pound of manufacturing from the selling value per pound of the product. This net price per pound, multiplied by the yield of the product per 100 pounds of milk as shown in Table II will give the net return for 100 pounds of milk. The net return for 100 pounds of milk divided by the per cent of fat in the milk will give the net return for one pound of fat.

For example:—If milk tests 3.8 per cent of fat while cheese sells for 24½ cents per pound and the cost of manufacturing is 2½ cents per pound, the net value to the producer of 1 pound of cheese is 24½ cents - 2½ cents = 22½ cents. Referring to Table II, 100 pounds of milk testing 3.8 per cent of fat will produce approximately 9.72 pounds of cheese. Therefore the net return of 100 pounds of milk is  $9.72 \times 22\frac{1}{2}$  cents = \$2.16. The net return for 1 pound of fat is determined by dividing \$2.16 by 3.8, which gives 56.84 cents. The value of the same milk manufactured into butter may be determined in a similar way if the market value of butter is known. If the cost of manufacturing differs from the figures used in the table, the correct figures may be substituted.



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